TROPICAL RAINFALL MEASURING MISSION

June 21, 1999 - June 27, 1999
DOY 172 - 178
Day of Mission 571 - 577

TRMM MISSION OPERATIONS

- TRMM is flying in the +X Forward direction as of 99-150, at 09:21:32z.
- The next Yaw maneuver is scheduled for July 1st (99-182).
- Delta-V maneuver #107 is scheduled for June 30th (99-181) using the LBS thrusters.
- The Beta angle range for DOY 179 to 185 is +14.9° to -8.5°.

TRMM SUBSYSTEM OPERATIONS

Attitude Control System

Delta-V maneuver #105 was successfully conducted on 99-172 at 16:05:59z and 16:53:15z, for durations of 38.125 and 14.875 seconds respectively, using the LBS thrusters. The off-modulation of the -Yaw thruster (#1) was 7.9% for burn 1 (92.1% on time). The off-modulation of the +Pitch thruster (#2) for burn 1 and 2 was 26.6% and 23.5% respectively (73.4% and 76.5% on time). The remaining fuel is 719.677 kg and the final apogee and perigee height is 354.61 km x 347.62 km.

Delta-V maneuver #106 was successfully conducted on 99-177 at 14:52:18z and 15:38:09z, for durations of 48.5 and 18 seconds respectively, using the LBS thrusters. The off-modulation of the -Yaw thruster (#1) was 7.5% for burn 1 (92.5% on time). The off-modulation of the +Pitch thruster (#2) for burn 1 and 2 was 24.2% and 20.1% respectively (75.8% and 79.9% on time). The remaining fuel is 718.104 kg and the final apogee and perigee height is 354.79 km x 347.67 km.

Delta-V #106 was the second maneuver out of 30 in which ACS TSMs #4 and #7 threshold #2 failed (Solar Array sensed/commanded position difference of 0.51° for two minutes). This was the original FDC threshold which placed the spacecraft in Sun Acq mode on 99-003 following several weeks at the new 50° software stops for the solar arrays. The new limit for FDC tests 112 and 113 was changed to 12° on 99-040, and TSMs 4 and 7 were created and installed on 99-049 to notify the ground when thresholds of 0.51°, 5°, and 10° are crossed. In this case, it took approximately 6 minutes (99-177-14:58:48-15:04:50z) for the sensed position to reach within 0.51° commanded position and an additional 1 minute 18 seconds for the solar arrays to reach the final position of 50°. The TSMs were reset as part of the daily S/C ATS load.

The FOT, NASA engineers, and Flight Software are now deciding which tests can be performed to gather data for AR #74 on 99-212 when TRMM reaches a beta angle of 54° in July. Safing criteria if needed will be decided well before that date, but the oscillations should be minimal as compared to those seen at the beta angle peak (58°). The next time TRMM will be at a maximum beta angle (-58°) is at the beginning of the new year. Flight Software and the ACS

engineers are discussing the possibility of a software patch to filter out the gyro-sensed disturbances before they reach the arrays and MTBs which can be ready in about six months.

The ESA experienced Moon interference in quadrants 2 and 4 during 99-173 through 99-177. Sun interference was experienced in quadrants 1 and 3 during 99-172 through 99-174. The ACS performed nominally during the transitions between 3 head and 4 head control.

Flight Data System (FDS)/Command & Data Handling (C&DH)

The frequency standard continues to drift in the negative direction. The frequency remains x'765', with a current drift rate of -1.0 µs/hr. The UTCF remains 31535996.863316 sec with a current drift value of -192 µs.

The flywheel dwell value incremented to x'106' on 99-173 at 02:18:27z.

EDAC multi-bit errors occurred on 99-174 at 17:25z and 99-178 at 07:34z.

An Invalid Stream Id was received from XS on 99-176 at 17:25:58z due to VIRS event #20.

Reaction Control Subsystem (RCS)

The RCS subsystem performed nominally during this period. See the ACS section for specific Delta-V information.

Power Subsystem

The Power subsystem is operating nominally. A PSIB memory dump was performed on 99-174 to analysis the portions of PSIB code which have not been affected by the PSIB anomaly.

Electrical Subsystem

The Electrical subsystem operated nominally during this period.

Thermal Subsystem

The Thermal subsystem operated nominally during this period.

Deployables Subsystem

The Deployables subsystem performed nominally during this period.

The testing for parking the -Y solar array at 30° is in its final stages. A modified RTS #5, which re-enables the -Y GSACE sequencer if Sun-Acq occurs, has also been tested with the -Y array indexing successfully after commanding the simulator to Sun Acq.

The solar array parking readiness review is being held on June 30th to review all data analyzed on the subject on decide on the whether or not to implement the parking scenario

RF/Communications Subsystem

The RF/Communications subsystem performed nominally during this period.

SPACECRAFT INSTRUMENTS

CERES

CERES personnel are developing a plan for operating the instrument with the +15 V DAA anomaly. Work continues in creating and testing the new Tables and RTSs required.

The instrument was powered for Australia testing six different time during this week. The configuration times are listed below.

Activity	Time
Power ON	99-172-02:05:26z
Crosstrack	99-172-02:11:14z
Power OFF	99-172-03:55:42z
Power ON	99-174-01:16:46z
Crosstrack	99-174-01:22:33z
Power OFF	99-174-03:07:50z
Power ON	99-176-00:30:06z
Crosstrack	99-176-00:37:06z
Power OFF	99-176-02:21:18z
Power ON	99-176-23:15:26z
Crosstrack	99-176-23:21:35z
Power OFF	99-177-01:37:42z
Power ON	99-177-22:43:26z
Crosstrack	99-177-22:48:30z
Power OFF	99-178-01:34:30z
Power ON	99-178-22:33:02z
Crosstrack	99-178-22:38:07z
Power OFF	99-179-01:45:26z

All temperatures were within limits. The next turn on is 99-179, at 21:49z. This Australia field campaign will continue until mid-July.

LIS

LIS performed nominally during this time period.

A routine command request from MSFC to reset the instrument and configure it back to normal was performed on 99-173 at 12:53z.

PR

PR performed nominally during this time period. The list of Internal Calibration times in which PR was not radiating is listed below:

1999:172:03:37:36-03:39:50z
1999:173:04:00:21-04:02:28z
1999:174:02:49:07-02:51:19z
1999:174:19:09:04-19:11:39z
1999:175:03:11:46-03:13:53z
1999:176:02:00:14-02:02:26z
1999:176:18:18:04-18:22:54z
1999:177:02:22:52-02:24:50z
1999:178:01:11:12-01:13:22z
1999:178:17:29:22-17:34:14z
1999:178:23:59:57-179:00:02:11z

TMI

TMI performed nominally during this time period.

VIRS

VIRS performed nominally during this time period.

GROUND SYSTEM

Y2K testing has been completed on string 3. String 3 operational readiness testing will be performed after completion of rollover testing. String 2 remains the prime Mission Planning string for normal spacecraft operations.

Event Reports

No new event reports were generated during this week.

Generic Late Acquisition Reports (for TTRs 19639)

No new generic late acquisition reports were generated during the week.

New Anomaly

No new anomaly reports were generated during this week.

Recurring Open Anomalies

There has been no recurring open anomalies during this week.

Prepared by:
Joseph Kowalski
TRMM Systems Engineer

Approved by:
Lou Kurzmiller
FOT Manager